

REMARKS

Claims 1 and 11 are amended. Support for the amendments is found in Figure 4 and at p. 11, line 16 – p. 12, line 9 of the specification. No new matter is added.

The Examiner rejected claims 1, 10, 11 and 20 under 35 U.S.C. § 103 as being unpatentable over Watters in combination with Soliman. Watters discloses a method of determining the location of a mobile terminal by measuring the Time Difference Of Arrival (TDOA) between synchronous signals transmitted from two or more base stations (e.g., a pilot signal). col. 1, lines 24-36. To reduce errors and hence improve location determination accuracy, Watters provides a plurality of calibration terminals (Fig. 3) with known locations. The calibration terminals measure the TDOAs of signals of base stations pairs within their receiving range, and generate correction factors based on the difference between a location calculated from the TDOAs and their known location. col. 4, lines 42-51. Nearby mobile terminals may use the correction factors to improve their own TDOA-derived location accuracy.

The present invention does not calculate location by measuring the TDOA of signals from pairs of satellites. Base stations are geographically fixed; GPS satellites are not. As described in the specification at p. 9, line 23 – p. 10, line 21, the GPS receiver of the present invention calculates position by a three-step process comprising acquisition of at least four navigation satellite signals; synchronization and demodulation of the signals; and finally measurement and position computation based on the ephemeris data in the signals.

Due to periodic interference from ongoing communications with a wireless communication network (see Fig. 3), the bit-edge synchronization (step two of the process) may be impossible if a satellite signal bit-edge falls within the interference period. See Figs. 4, 5B. To perform bit-edge synchronization in the presence of the periodic interference, the present invention uses the TDOA between an obscured signal and one whose bit-edges are not obscured by the interference, to obtain the synchronization and proceed with the demodulation and data processing to obtain a position determination.

That is, the present invention uses TDOA to perform bit-edge synchronization in the presence of periodic interference that precludes direct bit-edge synchronization – not to calculate location by simple triangulation as Watters discloses. Conversely, Watters discloses the use of TDOA (the accuracy of which is enhanced by correction factors calculated in calibration terminals) between signals from known, fixed locations (base stations) only to directly calculate position. Watters does not disclose or suggest the use of TDOAs to perform bit-edge synchronization at all – much less in the presence of periodic interference.

The Examiner's assertion, "Note that in order to synchronize to the navigation codes would require synchronizing to the bit edges," is erroneous. First, Watters does not receive and compare navigation codes, it receives and compares a synchronous pilot signal from two or more base stations. Second, Watters does not synchronize the signals. Only in the very rare case that a mobile terminal happens to be precisely equidistant from the base stations would the signals be synchronous (or synchronized). It is precisely the difference in the timing of the signals – the TDOA – that Watters depends on to perform location determination.

Claims 1 and 11 are amended herein to explicitly recite that one received navigation satellite signal does not have bit-edges obscured by the periodic interference, and another navigation satellite signal does have bit-edges obscured by the periodic interference. TDOA is used to perform bit-edge synchronization on the latter. Neither Watters nor Soliman, alone or in combination, teach or suggest using TDOA to perform bit-edge synchronization at all, and certainly not where one signal's bit-edges are obscured by periodic interference. Claims 10 and 20 include all limitation of their respective claims. Applicants note that claims 21-29 are allowed, and claims 2-9 and 12-19 are objected to. As the amendments to claims 1 and 11 unambiguously define patentably over the art of record, prompt allowance of all pending claims is respectfully requested.

Respectfully submitted,

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